

WHAT IS CLAIMED IS:

1. An optical transmission line comprising:
  - a first optical fiber having a first dispersion value of 6 to 14 ps/nm/km at a wavelength of 1550 nm;
  - a second optical fiber having a second dispersion value of -14 to -6 ps/nm/km at the wavelength of 1550 nm;
  - said first optical fiber is connected in series to said second optical fiber; and
  - a dispersion slope of said first optical fiber has an opposite sign relative to a dispersion slope of said second optical fiber in a wavelength range of 1530 nm to 1570 nm, wherein said second optical fiber has at the wavelength of 1550 nm:
    - a transmission loss of 0.30 dB/km or less,
    - a polarization mode dispersion value of 0.15 ps/km<sup>1/2</sup> or less,
    - a bending loss of 10 dB/m or less in a bending diameter of 20 mm, and
    - a mode field diameter of 5.5  $\mu$ m or more.
2. The optical transmission line according to claim 1, wherein said first optical fiber has at the wavelength of 1550 nm:
  - a transmission loss of 0.25 dB/km or less,
  - a polarization mode dispersion value of 0.15 ps/km<sup>1/2</sup> or less,
  - a bending loss of 10 dB/m or less in a bending diameter of 20 mm, and
  - a mode field diameter of 9.5  $\mu$ m or more.
3. The optical transmission line according to claim 2, wherein said first optical fiber is a single-peak type optical fiber comprising:
  - a core, and

a cladding surrounding said core,  
wherein said core has an  $\alpha$ -profile.

4. The optical transmission line according to claim 2, wherein said first optical fiber is a dual core optical fiber comprising:

a center core,  
a side core surrounding said center core and having a refractive index smaller than a refractive index of said center core, and  
a cladding surrounding said side core and having a refractive index smaller than said refractive index of said side core.

5. The optical transmission line according to claim 2, wherein said first optical fiber is a depressed center core optical fiber comprising:

a center core,  
a side core surrounding said center core and having a refractive index larger than a refractive index of said center core, and  
a cladding surrounding said side core and having a refractive index smaller than said refractive index of said side core and larger than said refractive index of said center core.

6. The optical transmission line according to claim 2, wherein said first optical fiber comprises:

a center core,  
a first side core surrounding said center core,  
a second side core surrounding said first side core, and

a cladding surrounding said second side core such that a relation  $\Delta 2 > \Delta 3 > \Delta 1$  is satisfied, where a relative refractive index difference of said center core with said cladding is  $\Delta 1$ , a relative refractive index difference of said first side core with said cladding is  $\Delta 2$ , and a relative refractive index difference of said second side core with said cladding is  $\Delta 3$ .

7. The optical transmission line according to claim 1, wherein said first optical fiber is a single-peak type optical fiber comprising:

- a core, and
- a cladding surrounding said core,
- wherein said core has an  $\alpha$ -profile.

8. The optical transmission line according to claim 1, wherein said first optical fiber is a dual core optical fiber comprising:

- a center core,
- a side core surrounding said center core and having a refractive index smaller than a refractive index of said center core, and
- a cladding surrounding said side core and having a refractive index smaller than said refractive index of said side core.

9. The optical transmission line according to claim 1, wherein said first optical fiber is a depressed center core optical fiber comprising:

- a center core,
- a side core surrounding said center core and having a refractive index larger than a refractive index of said center core, and

a cladding surrounding said side core and having a refractive index smaller than said refractive index of said side core and larger than said refractive index of said center core.

10. The optical transmission line according to claim 1, wherein said first optical fiber comprises:

- a center core,
- a first side core surrounding said center core,
- a second side core surrounding said first side core, and
- a cladding surrounding said second side core such that a relation  $\Delta 2 > \Delta 3 > \Delta 1$  is satisfied, where a relative refractive index difference of said center core with said cladding is  $\Delta 1$ , a relative refractive index difference of said first side core with said cladding is  $\Delta 2$ , and a relative refractive index difference of said second side core with said cladding is  $\Delta 3$ .

11. The optical transmission line according to claim 1, wherein said second optical fiber is a W-shape optical fiber comprising:

- a center core,
- a side core surrounding said center core and having a refractive index smaller than a refractive index of said center core,
- a cladding surrounding said side core and having a refractive index larger than said refractive index of said side core and smaller than said refractive index of said center core.

12. The optical transmission line according to claim 1, wherein said second optical fiber comprises:

- a center core,
- a first side core surrounding said center core,

a second side core surrounding said first side core, and  
a cladding surrounding said second side core such that a relationship  $\Delta 1 > \Delta 3 > \Delta 2$  is satisfied, where a relative refractive index difference of said center core with said cladding is  $\Delta 1$ , a relative refractive index difference of said first side core with said cladding is  $\Delta 2$ , and a relative refractive index difference of said second side core with said cladding is  $\Delta 3$ .

13. An optical transmission line comprising:

a first optical fiber and a second optical fiber;

said first optical fiber has at a wavelength of 1550 nm:

a dispersion value of 6 to 14 ps/nm/km,

a transmission loss of 0.25 dB/km or less,

a polarization mode dispersion value of 0.15 ps/km<sup>1/2</sup> or less,

a bending loss of 10 dB/m or less in a bending diameter of 20 mm, and

a mode field diameter of 9.5 μm or more,

and said second optical fiber has at the wavelength of 1550 nm:

a dispersion value of -14 to -6 ps/nm/km,

a transmission loss of 0.30 dB/km or less,

a polarization mode dispersion value of 0.15 ps/km<sup>1/2</sup> or less,

a bending loss of 10 dB/m or less in the bending diameter of 20 mm, and

a mode field diameter of 5.5 μm or more.